

# **U.S. EPA Workshop on Managing Arsenic Risks to the Environment: Characterization of Waste, Chemistry, and Treatment and Disposal**

## **Proceedings and Summary Report**

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National Risk Management Research Laboratory  
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## **Notice**

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## Foreword

The U.S. Environmental Protection Agency (EPA) is charged by Congress with protecting the Nation's land, air, and water resources. Under a mandate of national environmental laws, the Agency strives to formulate and implement actions leading to a compatible balance between human activities and the ability of natural systems to support and nurture life. To meet this mandate, EPA's research program is providing data and technical support for solving environmental problems today and building a science knowledge base necessary to manage our ecological resources wisely, understand how pollutants affect our health, and prevent or reduce environmental risks in the future.

The National Risk Management Research Laboratory (NRMRL) is the Agency's center for investigation of technological and management approaches for preventing and reducing risks from pollution that threaten human health and the environment. The focus of the Laboratory's research program is on methods and their cost-effectiveness for prevention and control of pollution to air, land, water, and subsurface resources; protection of water quality in public water systems; remediation of contaminated sites, sediments and ground water; prevention and control of indoor air pollution; and restoration of ecosystems. NRMRL collaborates with both public and private sector partners to foster technologies that reduce the cost of compliance and to anticipate emerging problems. NRMRL's research provides solutions to environmental problems by: developing and promoting technologies that protect and improve the environment; advancing scientific and engineering information to support regulatory and policy decisions; and providing the technical support and information transfer to ensure implementation of environmental regulations and strategies at the national, state, and community levels.

This publication has been produced as part of the Laboratory's strategic long-term research plan. It is published and made available by EPA's Office of Research and Development to assist the user community and to link researchers with their clients.

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## List of Acronyms

AMD	Acid Mine Drainage
ATP	Adenosine Triphosphate
AVS	Acid Volatile Sulfide
BDAT	Best Demonstrated Achievable Technology
BRS	EPA Biennial Report System
CAA	Clean Air Act
CCA	Chromated Copper Arsenate
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CWA	Clean Water Act
DMAA	Dimethylarsinic Acid
DOD	U.S. Department of Defense
DOE	U.S. Department of Energy
EM	Electron Microprobe
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right to Know Act
FDA	Food and Drug Administration
GPS	Global Positioning System
HGMS	High Gradient Magnetic Separation
ISCF	In-Situ Chemical Fixation
LDR	Land Disposal Restriction
LRPCD	Land Remediation and Pollution Control Division (NRMRL)
MCL	Maximum Contaminant Level
MEP	Multiple Extraction Procedure
MMAA	Monomethylarsonic Acid
MPW	Mineral Processing Waste
NCEA	National Center for Environmental Assessment
NERL	National Exposure Research Laboratory
NHEERL	National Health and Environmental Effects Research Laboratory
NPL	National Priorities List

## **List of Acronyms (Cont.)**

NRMRL	National Risk Management Research Laboratory
NURE	National Uranium Resource Evaluation (a program)
ORD	Office of Research and Development
ORP	Oxidation-Reduction Potential
OSW	Office of Solid Waste
PAH	Polynuclear Aromatic Hydrocarbons
PIG	Peat, Iron, and Gypsum
PRB	Permeable Reactive Barrier
RCRA	Resource Conservation and Recovery Act
RME	Risk Management Evaluation
ROD	Record of Decision
S/S	Solidification/Stabilization
SMZ	Surfactant-Modified Zeolite
SPLP	Synthetic Precipitation Leaching Procedure
SPRD	Subsurface Protection and Remediation Division (NRMRL)
TCLP	Toxicity Characteristic Leaching Procedure
TRI	Toxics Release Inventory
TSD	Treatment, Storage, and Disposal
TTSD	Technology Transfer and Support Division (NRMRL)
USGS	U.S. Geological Survey
WET	Waste Extraction Test
WTP	Water Treatment Plant
ZVI	Zero-Valent Iron